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U. S. Department of Agriculture

Honey as the Food Chemist Sees It

A radio talk by Miss Ruth Van Deman, Bureau of Home Economics, delivered in the Department of Agriculture period of the National Farm and Home Hour, broadcast by a network of 48 associate NBC stations, Thursday, November 5, 1936.

MR. SALISBURY: Now I'm turning the microphone right over to your friend Ruth Van Deman. For she tells me that she has a great deal of modern and scientific information to give you about a very ancient and romantic food. Ruth, I'm sure the Greeks had a name for it.

MISS VAN DEMAN: I'm sure they did, Morse. But it slips my tongue right now - that Greek word for honey. But I've never forgotten the taste of some honey from Greece I had once, said to have been gathered by the bees from the flowers of the wild thyme on Mt. Olympus.

MR. SALISBURY: Honey from Mt. Olympus! Ruth, I'm afraid you're not entirely untouched by the romance of honey yourself.

MISS VAN DEMAN: Maybe not. And this certainly isn't getting off to a modern, scientific start. But I've noticed that even the men who study bees and are developing the modern science of apiculture don't always stick to cold facts when they talk about their subject. And it is hard to, when you think of the way honey is made - the way the bees collect the nectar drop by drop from thousands of flowers, fly back to their hives and pack the honey in infinitesimal quantities into the cells of the honeycomb, and finally seal them up with wax that they've manufactured themselves. When you think of all that work of wings that goes into the making of a pound of honey, it does become something more than just an ordinary sweet food.

MR. SALISBURY: Speaking practically, isn't it something more than just a spread for hot biscuits and pan cakes?

MISS VAN DEMAN: Yes, from the straight chemical standpoint, honey is rather extraordinary. In general it's about one-fifth water, but the sweet substance chemists have found is made up of three kinds of sugars. Levulose (fruit sugar) and dextrose (grape sugar) are the two chief kinds. Then there is a small amount of sucrose (cane sugar).

Levulose and dextrose are what is known as simple sugars. They're in a form that the body can assimilate very easily. That's why honey is sometimes recommended as the sweet food to use in modifying the baby's milk.

MR. SALISBURY: Haven't some of your home economics people studied the chemistry of honey in relation to cooking.

(over)

MISS VAN DEMAN: Yes, Elizabeth Whiteman lined up all the important kinds of honey from different parts of the country and tried them out one after another - clover, alfalfa, buckwheat, sage, and tupelo. She found that they didn't all act alike. The bees don't standardize their product enough. Their process is always the same, but they don't carry a chemical formula around with them to be sure they're getting the same proportion of levulose and dextrose and sucrose in their honey all the time. That's why some honeys taste sweeter than others. They have a higher percentage of levulose. Honeys made from tupelo and wild sage flowers, for instance, are very sweet and they hold their liquid form very well. They are not so likely to become granular as alfalfa honey, which has a higher percentage of dextrose. This dextrose, or grape sugar, crystallizes more readily than levulose.

And compared with ordinary cane sugar, levulose, or fruit sugar, is sweeter and it doesn't crystallize so easily. Levulose absorbs and holds moisture. In technical language - its hygroscopic. But whatever the technical word, the fact that honey absorbs and holds moisture means that you have to be careful when you use it in making cakes and products like that where you want a light fluffy texture. For instance, if you're using honey as all or part of the sweetener in a cake batter, you can't use just the same quantities of the other ingredients that you would with granulated sugar. Cup for cup, honey may be as sweet as the granulated sugar, but you can't substitute them for each other on that same basis in a cake mixture and come out with the same kind of a cake.

And by the way, almost all honeys are likely to become cloudy and filled with crystals when they stand for a long time. Honey keeps best in a tightly sealed container in a dry place at ordinary room temperature.

Of course you can always melt the crystals out of honey by standing the jar in warm water. But don't get honey too hot, or you'll change the color, and drive off the aromatic substances that came in the nectar from the flowers. These essential oils that give flowers their perfume also give honey its distinctive flavor.

Now going back to what I said about using honey in cakes. Mrs. Whiteman found that the large amount of fruit sugar (levulose) in honey makes it caramelize easily. You have to watch your oven temperature when you are baking honey cakes or cookies, and keep it moderate, around 350 or 375 degrees, Fahrenheit. Mrs. Whiteman was finally able to work out some standard recipes for white cake and chocolate cake using all honey and half honey and half sugar. And she framed some general rules for substituting honey in recipes calling for sugar. They are a little complicated so I won't try to give you the figures now. But if you want them, just drop me a card and I'll be glad to send them to you.

MR. SALISBURY: Ruth, are you going to sign off without mentioning vitamins? Are there no vitamins in honey?

MISS VAN DEMAN: No, Morse, not enough to mention. Doctor Munsell ran tests some years ago on white clover and buckwheat honey but the vitamins just weren't there. But I think you can find plenty of other good reasons for enjoying honey.